

Title (en)  
Compression-ignition type engine

Title (de)  
Dieselbrennkraftmaschine

Title (fr)  
Moteur à allumage par compression

Publication  
**EP 0886050 A2 19981223 (EN)**

Application  
**EP 98111161 A 19980617**

Priority  
• JP 16146597 A 19970618  
• JP 3914698 A 19980220

Abstract (en)  
A compression-ignition type engine in which first fuel of an amount of not more than 30 percent of the maximum amount of fuel is injected in an injection timing region from about 90 degrees to about 20 degrees before top dead center of the compression stroke so that the injected fuel does not break up due to heat or burn until the top dead center of the compression stroke is substantially reached but undergoes an oxidation reaction. Next, second fuel is injected at substantially the top dead center of the compression stroke to start the combustion of the injected fuel. <IMAGE>

IPC 1-7  
**F02B 3/12**

IPC 8 full level  
**F02D 1/02** (2006.01); **F02B 1/12** (2006.01); **F02B 3/06** (2006.01); **F02B 75/02** (2006.01); **F02D 33/00** (2006.01); **F02D 41/30** (2006.01); **F02D 41/38** (2006.01); **F02D 41/40** (2006.01); **F02M 37/00** (2006.01); **F02M 45/02** (2006.01); **F02M 63/02** (2006.01)

CPC (source: EP US)  
**F02B 1/12** (2013.01 - EP US); **F02B 3/06** (2013.01 - EP US); **F02B 75/02** (2013.01 - EP US); **F02D 33/003** (2013.01 - EP US); **F02D 41/3035** (2013.01 - EP US); **F02D 41/3818** (2013.01 - EP US); **F02D 41/3827** (2013.01 - EP US); **F02D 41/403** (2013.01 - EP US); **F02M 37/00** (2013.01 - EP US); **F02M 63/0225** (2013.01 - EP US); **F02B 2275/14** (2013.01 - EP US); **F02D 41/402** (2013.01 - EP US); **Y02T 10/12** (2013.01 - EP US); **Y02T 10/40** (2013.01 - EP US)

Citation (applicant)  
JP H07317588 A 19951205 - TOYOTA MOTOR CORP

Cited by  
EP1031711A3; EP1348858A1; EP1221544A3; EP1134400A3; EP1063427A3; DE10040117A1; DE10040117B4; DE19953932A1; DE19953932C2; EP1167734A3; EP1233160A3; EP3246552A1; US10190527B2; US7152573B2; US6964256B2; US6640774B2; US6520142B2; WO0206657A1; WO2004072462A1; US6636797B2; US6505601B1; US6467452B1; US6491018B1; USRE40144E; EP1920149B1

Designated contracting state (EPC)  
DE FR GB IT

DOCDB simple family (publication)  
**EP 0886050 A2 19981223**; **EP 0886050 A3 19990811**; **EP 0886050 B1 20021113**; DE 69809335 D1 20021219; DE 69809335 T2 20030710; JP 4019484 B2 20071212; JP H1172038 A 19990316; US 6182632 B1 20010206

DOCDB simple family (application)  
**EP 98111161 A 19980617**; DE 69809335 T 19980617; JP 3914698 A 19980220; US 9634098 A 19980612